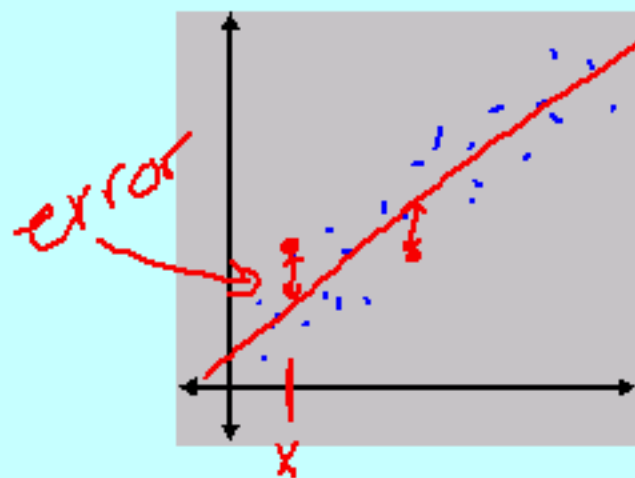


Chapter 2

Line of Best Fit



- Doesn't go thru all pts.
- $\text{error} = \text{actual pt } (y) - \text{predicted value } (y)$

- line of best fit = avg. for scatterplot

$$\sum + \text{errors} = \sum - \text{errors}$$

Linear Regression Line:

- straight line
- Describes how... a resp. var (y) changes as expl. var (x) changes
- Used to ... predict
- Requires that... expl. & resp. var.

Most accurate Regression line:

- Called: **Least Squares Regression line (LSR line)**

- Definition: minimizes...
the errors of y $\sum + \text{errors} = \sum - \text{errors}$

- Form: $y = mx + b$
 $\hat{y} = a + bx$

- Pieces: $b = r \left(\frac{s_y}{s_x} \right)$

- $a = \bar{y} - b\bar{x}$

- always ... passes thru (\bar{x}, \bar{y})
- not resistant

- on calculator:

STAT \rightarrow CALC \rightarrow #8: LinReg (a+bx) \rightarrow ENTER

Then put x-list, y-list, Y1 (found in VARS \rightarrow Y-vars \rightarrow fctn \rightarrow Y1)

AP Formula Sheet

$$b_1 = r \left(\frac{s_y}{s_x} \right)$$

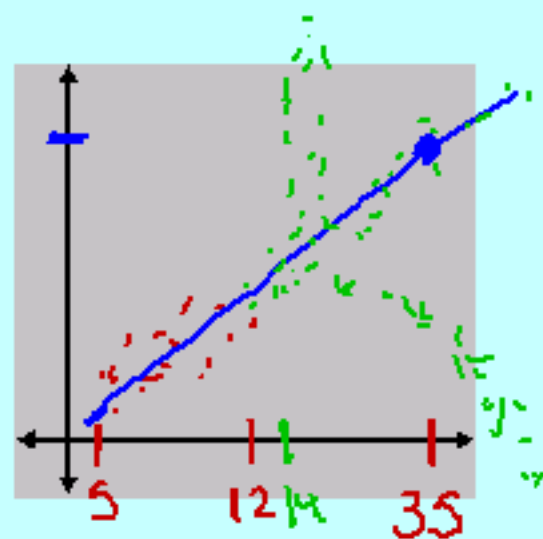
$$b_0 = \bar{y} - b_1 \bar{x}$$

\bar{x}	=
\bar{y}	=
s_y	=
s_x	=
r	=

Vocab:

Extrapolation-

we use a value
for x that is
outside the range
used to create LSR line
for prediction.



*NOT GOOD

Coefficient of Determination

what is it? $r^2 = (r)^2$

$$r = 0.5 \quad r^2 = 0.25 \Rightarrow 25\%$$

Sentence:

 % of the change in Y that
is explained by/due to the change in X.

Example:

64% of the Δ airfare is b/c
of Δ distance.

